

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appellant: Craig H. Barratt & William J. McFarland
Assignee: Atheros Communications, Inc.
Title: Apparatus And Method For Transmission Collision
Avoidance
Serial No.: 10/760,024 File Date: January 15, 2004
Examiner: Hicham B. Foud Art Unit: 2419
Docket No.: ATH-0116

April 27, 2009

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Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

APPEAL BRIEF

This Appeal Brief is in support of the Notice of Appeal dated April 27, 2009.

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I. REAL PARTY IN INTEREST

The real party in interest is the assignee, Atheros Communications, Inc., pursuant to the Assignment recorded in the U.S. Patent and Trademark Office on January 15, 2004 on Reel 014915, Frame 0038.

II. RELATED APPEALS AND INTERFERENCES

Based on information and belief, there are no other appeals or interferences that could directly affect or be directly affected by or have a bearing on the decision by the Board of Patent Appeals in the pending appeal.

III. STATUS OF CLAIMS

Claims 1-49, 51-52, 54-56, 58-60, and 62-67 are cancelled. Claims 50, 53, 57, and 61 are pending. Claims 50, 53, 57, and 61 stand rejected.

In the present paper, rejected Claims 50, 53, 57, and 61 are appealed.

Pending Claims 50, 53, 57, and 61 are listed in the Claims Appendix.

IV. STATUS OF AMENDMENTS

All claim amendments have been entered.

V. SUMMARY OF CLAIMED SUBJECT MATTER

A concise explanation of the subject matter defined in each of the independent claims involved in the appeal (i.e. Claims 50, 53, 57, and 60) is provided below. This concise explanation provides exemplary, non-limiting references to the specification by paragraph, page, and line numbers, and to the drawings, if any, by reference numbers/characters.

Claim 50. A method of minimizing collisions in a CSMA/CA wireless data communication system using an access point, the method comprising:

sensing the presence of a client desirous of communication with the access point [FIG. 1: 120, 130, 140; Specification: paragraph 0023 (page 5, lines 2-6), paragraph 0029 (page 6, lines 11-27);

allocating a start time slot list having at least one unique start time slot during which the client may begin transmitting [Specification: paragraph 0011 (page 2, lines 23-27), paragraph 0029 (page 6, lines 11-27)];

transmitting the start time slot list to the client [Specification: paragraph 0011 (page 2, lines 23-27), paragraph 0030 (page 6, line 28 to page 7, line 4)]; and

receiving a transmission from the client, the transmission beginning only during the start time slot(s) indicated by the start time slot list [Specification: paragraph 0011 (page 2, lines 23-27), paragraph 0030 (page 6, line 28 to page 7, line 4)].

wherein allocating includes:

assigning at least one pair of a high-priority start time slot and a low-priority start time slot substantially equally displaced in time from a center start time slot [FIG. 4: 420,

422H, 424L, 410; Specification: paragraph 0014 (page 3, lines 15-20), paragraph 0027 (page 6, lines 1-5), paragraph 0028 (page 6, lines 6-10)].

Claim 53. A method of minimizing collisions in a CSMA/CA wireless data communication system using an access point, the method comprising:

sensing the presence of a client desirous of communication with the access point [FIG. 1: 120, 130, 140; Specification: paragraph 0023 (page 5, lines 2-6), paragraph 0029 (page 6, lines 11-27);

allocating a start time slot list having at least one unique start time slot during which the client may begin transmitting [Specification: paragraph 0011 (page 2, lines 23-27), paragraph 0029 (page 6, lines 11-27)];

transmitting the start time slot list to the client [Specification: paragraph 0011 (page 2, lines 23-27), paragraph 0030 (page 6, line 28 to page 7, line 4)]; and

receiving a transmission from the client, the transmission beginning only during the start time slot(s) indicated by the start time slot list [Specification: paragraph 0011 (page 2, lines 23-27), paragraph 0030 (page 6, line 28 to page 7, line 4)],

wherein the start time slot list includes a high-priority time slot and a low-priority time slot substantially equally displaced in time from a center time slot [FIG. 4: 420, 422H, 424L, 410; Specification: paragraph 0014 (page 3, lines 15-20), paragraph 0027 (page 6, lines 1-5), paragraph 0028 (page 6, lines 6-10)].

Claim 61. An access point that minimizes collisions in a CSMA/CA wireless data communication system, the access point comprising:

 a client sensor for detecting the presence of a client desirous of communication with the access point [FIG. 5: 530; Specification: **paragraph 0029 (page 6, lines 11-27)**];

 a start time slot allocator for allocating a start time slot list having one or more unique start time slots during which the client may begin to transmit [FIG. 5: 560, 570; Specification: **paragraph 0029 (page 6, lines 11-27)**];

 an access point transmitter for transmitting the start time slot list to a client receiver [FIG. 5: 520; Specification: **paragraph 0029 (page 6, lines 11-27)**]; and

 an access point receiver for receiving a transmission from the client, the transmission being received only during the start time slot(s) indicated by the start time slot list [FIG. 5: 510; Specification: **paragraph 0029 (page 6, lines 11-27)**],

 wherein the start time slot allocator comprises:

 a start time slot generator for generating at least one pair of a high-priority time slot and a low-priority start time slot, the high-priority time slot and the low-priority start time slot substantially equally displaced in time from a center start time slot [FIG. 5: 560; Specification: **paragraph 0029 (page 6, lines 11-27)**; FIG. 4: 420, 422H, 424L, 410; Specification: **paragraph 0014 (page 3, lines 15-20)**, **paragraph 0027 (page 6, lines 1-5)**, **paragraph 0028 (page 6, lines 6-10)**].

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

The following issues are presented to the Board of Appeals for decision:

- (A) Whether Claims 50, 53, and 61 are patentable under 35 U.S.C. 103(a) over U.S. Patent 6,963,549 (Jayaraman) in view of U.S. Patent 5,742,239 (Siloti).
- (B) Whether Claim 57 is patentable under 35 U.S.C. 103(a) over Jayaraman, Siloti, and U.S. Patent 7,206,320 (Iwamura)

VII. ARGUMENTS

A. Claims 50, 53, and 61 are patentable under 35 U.S.C. 103(a) over U.S. Patent 6,963,549 (Jayaraman) in view of U.S. Patent 5,742,239 (Siloti).

1. Jayaraman: Overview

Jayaraman teaches that a central authority selectively reserves a time slot for transmitting from a local station and then prevents other local stations from transmitting during the time slot. Col. 1, lines 60-64. In one embodiment, the central authority and a requesting station can negotiate the duration of the reserved time slot. Col. 5, lines 5-9.

2. Siloti: Overview

Siloti teaches assigning time slots to various nodes and arbitrating using the time slots when the network is free. Col. 1, lines 51-52. If there are no requests for use of the network

after a predefined number of time slots, any node can immediately access the network using a collision-detection method without being required to wait for a time slot arbitration procedure. Col. 1, lines 52-56.

3. Limitations recited in Claims 50, 53, and 61 are not taught by the combination of Jayaraman and Siloti.

Claim 50 recites (emphasis added):

A method of minimizing collisions in a CSMA/CA wireless data communication system using an access point, the method comprising:

sensing the presence of a client desirous of communication with the access point;

allocating a start time slot list having at least one unique start time slot during which the client may begin transmitting;

transmitting the start time slot list to the client; and

receiving a transmission from the client, the transmission beginning only during the start time slot(s) indicated by the start time slot list,

wherein allocating includes:

assigning at least one pair of a high-priority start time slot and a low-priority start time slot substantially equally displaced in time from a center start time slot.

Appellant respectfully submits that Jayaraman and Siloti, even when combined, fail to disclose or suggest the recited assigning. The Examiner admits that Jayaraman teaches nothing about a pair of time slots, wherein the pair includes a high-priority start time slot and a low-priority start time slot.

To remedy this deficiency of Jayaraman, the Examiner cites Siloti. Specifically, the Examiner cites col. 2, lines 39-49 and FIG. 3 as teaching the recited high-priority and low-priority start time slots. Appellant respectfully traverses this characterization.

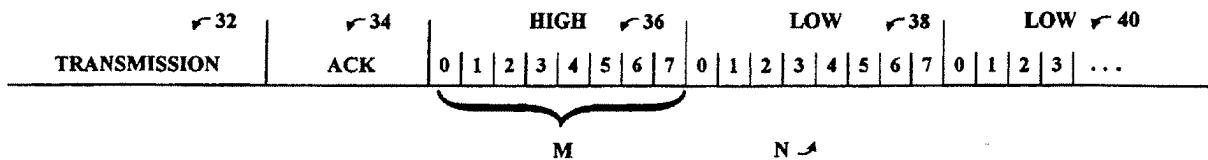
FIG. 3

FIG. 3 of Siloti is provided for convenience above. In col. 2, lines 27-50 state:

FIG. 3 is a timing diagram illustrating the time slots used by the present invention. ... In first, high priority set-up time slots 36, eight time slots are shown. ... This is followed by the same series of time slots in a low priority band 38. Thereafter, the low priority band repeats as indicated by band 40.

In the illustration of FIG. 3, eight nodes are allowed in the network, with the total number of nodes being indicated by the variable M. A particular node is assigned a particular time slot N, such as time slot 4 as shown in FIG. 3. A particular node will be able to transmit a request for control of the bus at its time slot N in either the high or the low band depending upon the current priority for that node. As can be seen, a significant delay corresponding to the total number of time slots in both the high and low band must pass before any node can begin transmission, regardless of how busy the network is.

The Examiner alleges that time slots "4" in the high and low priority bands are substantially equally displaced in time from a center start time slot "0" in the low priority band. Moreover, the Examiner argues that Appellant has not provided arguments with respect to the recited limitation, explained how the claims avoid the references, or distinguish from them. Appellant disagrees with the Examiner's characterization of Siloti and with the arguments presented by Appellant.

Appellant respectfully traverses the Examiner's argument that Siloti has chosen slot "0" in the low priority band 38 as the recited center start time slot (and merely declines to use "his own lexicography" to designate the recited pair assignment). Using this logic, a node that is assigned slot "7" in the high priority band 36 and the low priority band 38 then has slots equally displaced in time from a center start time slot "3" in the low priority band 38. In contrast, a node that is assigned slot "2" in the high priority band 36 and the low priority band 38 then has slots equally displaced in time from a center start time slot "6" in the high priority band 36. Thus, by using the Examiner's logic, the recited limitation of a "center start time slot" is rendered meaningless to fit the Examiner's characterization of Siloti.

Appellant respectfully submits that Siloti teaches nothing about a center start time slot. As explicitly taught by Siloti, each node is assigned a particular slot, e.g. slot "4" in each priority band (high priority band 36, low priority band 38, low priority band 40, etc.). Col. 2, lines 41-42. A node can transmit a request for control of the bus at its time slot N (e.g. slot "4") in either the high or low band depending on the current priority for that node. Col. 2, lines 43-45. Therefore, Siloti fails to teach anything about assigning a high-priority start time slot and a low-priority start time slot substantially equally displaced in time from a center start time slot.

Because the cited references, even when combined, fail to disclose or suggest **assigning at least one pair of a high-priority start time slot and a low-priority start time slot substantially equally displaced in time from a center start time slot**, Appellant respectfully requests reconsideration and withdrawal of the rejection of Claim 50.

Claim 53 recites (emphasis added) :

A method of minimizing collisions in a CSMA/CA wireless data communication system using an access point, the method comprising:

sensing the presence of a client desirous of communication with the access point;

allocating a start time slot list having at least one unique start time slot during which the client may begin transmitting;

transmitting the start time slot list to the client; and

receiving a transmission from the client, the transmission beginning only during the start time slot(s) indicated by the start time slot list,

wherein the start time slot list includes a high-priority time slot and a low-priority time slot substantially equally displaced in time from a center time slot.

Therefore, Claim 53 is patentable for substantially the same reasons presented for Claim 50. Based on those reasons, Appellant requests reconsideration and withdrawal of the rejection of Claim 53.

Claim 61 recites (emphasis added) :

An access point that minimizes collisions in a CSMA/CA wireless data communication system, the access point comprising:

a client sensor for detecting the presence of a client desirous of communication with the access point;

a start time slot allocator for allocating a start time slot list having one or more unique start time slots during which the client may begin to transmit;

an access point transmitter for transmitting the start time slot list to a client receiver; and

an access point receiver for receiving a transmission from the client, the transmission being received only during the start time slot(s) indicated by the start time slot list,

wherein the start time slot allocator comprises:

a start time slot generator for generating at least one pair of a high-priority time slot and a low-priority start time slot, the high-priority time slot

and the low-priority start time slot substantially equally displaced in time from a center start time slot.

Therefore, Claim 61 is patentable for substantially the same reasons presented for Claim 50. Based on those reasons, Appellant requests reconsideration and withdrawal of the rejection of Claim 61.

B. Claim 57 is patentable under 35 U.S.C. 103(a) over Jayaraman, Siloti, and U.S. Patent 7,206,320 (Iwamura)

1. Jayaraman and Siloti: Overview (see Section A)

2. Iwamura: Overview

Iwamura teaches a network being divided into periodic cycles, each cycle comprising a number of time slots. Abstract. The timing of the cycles is determined by a cycle master. Abstract. A portion of each cycle is reserved for the transmission of asynchronous data, the remainder being utilized for isochronous streams. Abstract. Before transmitting a new stream, a transmitter wins one or more open slots by arbitration, wherein the winner is selected based on the priority of the stream to be sent. Abstract.

3. Limitations recited in Claim 57 are not taught by the combination of Jayaraman, Siloti, and Iwamura.

Claim 57 depends from Claim 53 and therefore is patentable for at least the reasons presented for Claim 53. Iwamura fails to remedy the deficiency of Jayaraman and Siloti with respect to Claim 53. Specifically, Iwamura also fails to disclose or suggest **assigning at least one pair of a high-priority start**

time slot and a low-priority start time slot substantially equally displaced in time from a center start time slot.

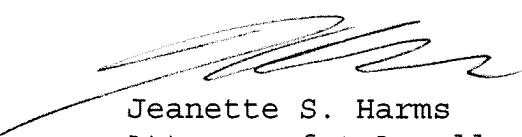
Moreover, Claim 57 recites, "the client selecting between the high-priority start time slot and the low-priority start time slot based on a randomizing function". The Examiner cites col. 2, lines 11-14 as teaching this limitation. Appellant traverses this characterization. Col. 2, lines 11-14 teaches a conventional carrier sense multiple access/collision avoidance (CSMA/CA) technique in which a device that wants to communicate on a bus detects whether a carrier is detected on the bus. If not, then the device proceeds to communicate on the bus. If so, then the device enters a backoff mode and reattempts the process at later time. The wait time during backoff is generally randomized so that multiple waiting devices do not collide. This randomized wait time has nothing to do with a client randomly selecting between a high-priority start time slot and a low-priority start time slot.

Based on the above reasons, Appellant requests reconsideration and withdrawal of the rejection of Claim 57.

C. CONCLUSION

For the foregoing reasons, it is submitted that the Examiner's rejections of Claims 50, 53, 57, and 61 are erroneous, and reversal of these rejections is respectfully requested.

Respectfully submitted,



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VIII. CLAIMS APPENDIX

1-49. (Cancelled)

50. (Previously Presented) A method of minimizing collisions in a CSMA/CA wireless data communication system using an access point, the method comprising:

sensing the presence of a client desirous of communication with the access point;

allocating a start time slot list having at least one unique start time slot during which the client may begin transmitting;

transmitting the start time slot list to the client; and

receiving a transmission from the client, the transmission beginning only during the start time slot(s) indicated by the start time slot list,

wherein allocating includes:

assigning at least one pair of a high-priority start time slot and a low-priority start time slot substantially equally displaced in time from a center start time slot.

51-52. (Cancelled)

53. (Previously Presented) A method of minimizing collisions in a CSMA/CA wireless data communication system using an access point, the method comprising:

sensing the presence of a client desirous of communication with the access point;

allocating a start time slot list having at least one unique start time slot during which the client may begin transmitting;

transmitting the start time slot list to the client; and

receiving a transmission from the client, the transmission beginning only during the start time slot(s) indicated by the start time slot list,

wherein the start time slot list includes a high-priority time slot and a low-priority time slot substantially equally displaced in time from a center time slot.

54-56. (Cancelled)

57. (Previously Presented) A client for receiving the start time slot list of claim 53, the client selecting between the high-priority start time slot and the low-priority start time slot based on a randomizing function.

58-60. (Cancelled)

61. (Previously Presented) An access point that minimizes collisions in a CSMA/CA wireless data communication system, the access point comprising:

a client sensor for detecting the presence of a client desirous of communication with the access point;

a start time slot allocator for allocating a start time slot list having one or more unique start time slots during which the client may begin to transmit;

an access point transmitter for transmitting the start time slot list to a client receiver; and

an access point receiver for receiving a transmission from the client, the transmission being received only during the start time slot(s) indicated by the start time slot list,

wherein the start time slot allocator comprises:

a start time slot generator for generating at least one pair of a high-priority time slot and a low-priority start time

slot, the high-priority time slot and the low-priority start time slot substantially equally displaced in time from a center start time slot.

62-67. (Cancelled)

IX. EVIDENCE APPENDIX

None.

X. RELATED PROCEEDINGS APPENDIX

None.